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FAMILY LYCEUM.

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BIOGRAPHY.

ELIZABETH.

ELIZABETH, queen of England, and one of its most celebrated sovereigns, was the daughter of Henry VIII, by his queen, Anne Boleyn. She was born in 1533, and educated in the principles of the Reformation, and also in those classical studies into which it had then become customary to initiate females of distinction in England. In her father's testament, she was placed the third in the order of succession; but the duke of Northumberland induced her brother, Edward VI, to set her aside, as well as her sister Mary, to make room for Jane Grey. In the reign of Mary, she was placed under circumstances of great difficulty, from her known attachment to Protestantism; and notwithstanding her great prudence, but for the politic interference of her brother-in-law, Philip of Spain, she might have been in great personal danger. On the death of Mary, in 1558, she was immediately proclaimed queen, and received in the metropolis with the loudest acclamations. She consigned to oblivion all the affronts she had received during the late reign, and prudently assumed the gracious demeanor of the common sovereign of all her subjects. Philip of Spain soon made her proposals of marriage, but she knew the aversion borne him by the nation too well to think of accepting them. She proceeded with considerable prudence and moderation to the arduous task of settling religion, which was, in a great degree, effected by the first parliament she summoned. It was not long before Elizabeth began that interference in the affairs of Scotland, which produced some of the most singular events of her reign. Mary, the young queen of Scots, was not only the next heir in blood to the English crown, but was regarded by the Romanists, who deemed Elizabeth illegitimate, as the true sovereign of England. By the marriage of that princess with the dauphin, and her relationship to the Guises, Scotland was also drawn into a closer union with France than ever. Thus great political causes of enmity abounded, in addition to the female rivalry, which was the most conspicuous foible of Elizabeth.—The first step she took in Scottish affairs was to send a fleet and an army to aid the party which supported the reformation; and this interference, in 1560, effected a treaty, by which the French were obliged to quit Scotland. On the return of Mary from France, after the death of her husband, attempts were made to procure Elizabeth's recognition of her title as presumptive successor to the crown of England; but, although unattended to, and very disagreeable to the latter, the two queens lived for some time in apparent amity. In the mean time, Elizabeth acquired great reputation by her vigorous conduct and political sagacity, and had many suitors among the princes of Europe, whom, consistent with her early resolution to live single, she constantly refused. Being regarded as the head of the Protestant party in Europe, she made a treaty of alliance with the French Huguenots in that capacity, and gave them aids in men and money. Her government at home also gradually grew more rigorous against the Catholics—one of the mischievous consequences of the incessant intrigue of the popish party, both at home and abroad, to overthrow her government. She did all in her power to thwart the attempts to unite Mary in a second marriage, and, besides a weak jealousy of the personal charms of the queen of Scotland, she discovered another weakness in a propensity to adopt court favorites, with a view to exterior accomplishments rather than to merit, as in the well known instance of Dudley, earl of Leicester. The political dissensions in Scotland, which gave Mary so much disquiet, were fomented by Elizabeth and her ministers, but it was her own misconduct that threw her into the hands of her rival. The manner in which Elizabeth detained the unhappy queen in captivity, the secret negociations of the latter with the duke of Norfolk, the rebellions in the north, and the treasonable engagements made by the earls of Northumberland and Westmoreland with the duke of Orleans, in the Low Countries, are affairs rather of history than biography. In the midst of these events, the Puritanical party gave much uneasiness to the queen, who was warmly attached to the ceremonials of religion, and to the hierarchy of which she had become the head. Inheriting, too, all the maxims of royal authority maintained by her father, the spirit of civil liberty, by which the Puritans became early distinguished, was very offensive to her. Elizabeth, however, understood the art of making practical concessions, while she maintained her dignity in language; and such was the general prudence and frugality of her administration, that she retained the affections even of those whom she governed with a rigorous hand. Almost the only cause of complaint, in regard to pecuniary matters, in this reign, arose from the injurious grant of monopolies, which formed a frequent subject of parliamentary complaint, and were often, in consequence, revoked. The assistance given by Elizabeth to the Protestants of the Low Countries induced Spain, in 1572, to promote a conspiracy, which was chiefly conducted by a Florentine merchant and the bishop of Ross, the Scottish resident in England. The duke of Norfolk, allowing himself to be drawn into a participation of this plot, on its discovery, was tried and executed. The massacre of St. Bartholomew, in the same year, alarmed all Protestant rulers, and especially Elizabeth, who put herself and court into mourning on the occasion, and received in silence the French ambassador sent to apologize for that execrable deed. She, however, maintained external amity with the French court, and even suffered negociations to be commenced for her marriage with the duke of Alencon, the king's brother, which brought that prince to England. An expectation that the union would take place now became general. In 1575, she received the offer of the sovereignty of the revolted Dutch provinces; but, from prudential reasons, she declined to accept it; and it was not until 1578 that she signed with them a treaty of alliance. In 1585, Elizabeth ventured openly to defy the hostility of Spain, by entering into a treaty with the revolted provinces, by which she bound herself to assist them with a considerable force, the command of which she intrusted to Leicester, who did little honor to her choice. She also sent an armament, under Drake, against the Spanish settlements in the West Indies, and made a league of mutual defence with James, king of Scotland, whose friendship she courted, while she detained his mother in prison. In 1586, that conspiracy took place, the object of which was her assassination by Anthony Babington. As Elizabeth's principal counsellors, as well as the nation at large, were of opinion that the safety of the state demanded the life of Mary, whatever may be thought of the injustice of her treatment, it was clearly the result of strong political circumstances.—Elizabeth, however, conscious of the invidious light in which the execution of a queen and relation would appear to Europe, practised all the arts of dissimulation to remove as much of the odium from herself as possible. She even wished Mary to be taken off privately; and it was only on the refusal of Sir Amias Paulet and Sir Drue Drury, her keepers, to be concerned in so odious an affair, that the curious transaction of furthering the warrant by Secretary Davison took place, the consequence of which was the execution of Mary, Feb. 8, 1587. The dissembled grief of Elizabeth, when informed of this catastrophe, deceived no one, although the imputed mistake of Davison, and the sacrifice of him to her assumed resentment, afforded the king of Scotland a pretext for resuming an amicable correspondence with the English court. The year 1588 was rendered memorable by the defeat of the Spanish armada, on which meditated invasion Elizabeth displayed all the confidence and energy of her character. Soon after this event, Elizabeth became the ally of Henry IV of France, in order to vindicate his title to that throne; and, for some years, English auxiliaries served in France, and naval expeditions were undertaken, in which none more distinguished themselves than the celebrated earl of Essex, who, on the death of Leicester, succeeded to his place in the queen's favor. In 1601, she held a conference with the marquis de Rosni, (afterwards the celebrated Sully,) who came over, on the part of Henry IV, to concert, in concurrence with England, a new balance of European power, to control the preponderance of the house of Austria. Elizabeth readily gave in to the project, and the minister quitted England in admiration of the solidity and enlargement of her political views. Having suppressed an insurrection in Ireland, and obliged all the Spanish troops, sent to aid in it, to quit the island, she turned her thoughts towards relieving the burdens of her subjects, and gained much additional popularity by suppressing a great number of unpopular monopolies. The execution of the earl of Essex, (see *Devereux, Roberts,*) however, gave a fatal blow to her happiness; and, on learning from the dying countess of Nottingham, that he had really transmitted the ring, which implied his request of pardon, she became furious with rage, and, when her anger subsided, fell into an incurable melancholy.—At length nature began to sink, and, as her end manifestly approached, she was urged by her council to declare her successor.—She answered, 'Who but her kinsman, the king of Scots?' and soon after, sinking into a lethargy, she expired, without further struggle or convulsion, on March 24, 1602, in the 70th year of her age, and 45th of her reign. Estimating the character and conduct of Elizabeth from the events of her reign, she will justly rank high among sovereigns. Under her auspices, the Protestant religion, as opposed to popery, was firmly established. Factions were restrained, the government strengthened, the vast power of Spain nobly opposed, oppressed neighbors supported, a navy created, commerce rendered flourishing, and the national character aggrandized. She did not merely lend a name to a conspicuous period of history; her own prudence, judgment, fortitude, firmness, vigor, and industry, materially contributed to the prosperity of her administration. She was frugal to the borders of avarice; but, being as economical of the people's money as of her own, her prudent attention to national expenditure contributed materially to the public good. The severity of Elizabeth to Catholic emissaries, Jesuits, and others, whether native or foreign, has latterly been deemed scarcely defensible, nor, on a religious ground, is it so; but it is never to be forgotten, that most of those who suffered really sought the overthrow of the state, and, in addition, acted under the direction of a foreign influence of the most baleful description. The treatment of the queen of Scots can never be defended, but will always remain one of those cases which neither policy, nor even personal danger, can sufficiently justify. It may be questioned, however, if the dissimulation of Elizabeth has not injured her memory in respect to this transaction, more than the deed itself, which was certainly deemed necessary both by her ministers and a vast majority of the people. Her principal defects were violence and haughtiness of temper, impatience of contradiction, and insatiable fondness for admiration and flattery. It is to be remarked, however, that, capricious as she was in her affections, and petty in her feminine jealousies, she always made even her favorites feel that she was their sovereign, when they were disposed to forget it. Although fond of literature, and substantially learned, she was no very munificent patroness, and made very poor returns for the excess of incense so lavishly bestowed upon her. She was skilled in the Greek, and spoke the Latin language with considerable fluency. She translated from the former into Latin a dialogue of Xenophon, two orations of Isocrates, and a play of Euripides, and also wrote a commentary on Plato. From the Latin she translated Boethius's Consolations of Philosophy, Sallust's Jugurthine War, and a part of Horace's Art of Poetry. In the Royal and Noble Authors of Lord Orford, may also be found a catalogue of translations from the French, prayers, meditations, speeches in parliament, letters, &c.—[*Encyclopædia Americana.*

VOSE'S ASTRONOMY.—John Vose, Esq., lately the Principal of Pembroke (N. H.) Academy, who several years since prepared a large work on Astronomy, has recently given to the public a more elementary treatise on this sublime science. The explanations and illustrations are so clear and familiar, as to render the book a proper and useful one for Common Schools. It is published by Carter, Hendee & Co., at so low a price as to give it a ready introduction and a general use in all our schools.

For the Family Lyceum.

NATURAL PHENOMENA.

NATURE AND FORMATION OF SNOW.

IF snow is carefully examined with an eye-glass immediately after it reaches the ground, it will be found to consist, for the most part, of a regular figure of transparent ice, in the form of a star of six points. On each of these points, if minutely inspected, will be seen other collateral points, having the same angles of those of the main star. Next to this figure is a single shoot often seen, resembling a small, slender cylinder. Besides these two regular figures, which are the principal ones, we discover various broken points and fragments, occasioned, probably, by the wind in their descent, and by being thawed and frozen again into irregular forms.

'From hence the true notion and external nature of snow seems to appear, viz.: that not only some few parts of snow, but originally the whole body of it, or of a snowy cloud, is an infinite mass of icicles regularly figured; that is, a cloud of vapors being gathered into drops, the said drops forthwith descend; on which descent, meeting with a soft freezing wind, or at least passing through a colder region of air, each drop is immediately frozen into an icicle, shooting itself forth into several points on each hand outward its centre; but still continuing their descent, and meeting with some sprinkling and intermixed gales of warmer air, or in their continual motion and waftage to and fro, touching upon each other, some are a little thawed, blunted, frosted, clampered; others broken, but the most clung in several particles together, which we call flakes of snow.'

Clouds of snow are said to differ from clouds of rain in nothing but in the circumstance of their being in a state of crystallization. The whiteness of snow is owing to the small particles into which it is divided; for ice, it is well known, if pounded fine, will become equally white. Its lightness—for ten cubic inches of snow weigh but about one of water—is owing, notwithstanding it is composed of solid particles of ice, to the excess of its surface compared with the matter contained under it.

It is a prevailing opinion that snow fertilizes the earth more than rain, in consequence of the nitrous salts which it is supposed to acquire by freezing; but it has been ascertained by experiments, that the chemical difference between snow and rain water is very small—the former being less nitrous, and possessing somewhat less proportion of earth than the latter. Neither of them, however, it is believed, contain earth or salts of any kind of sufficient quantity to be sensibly efficacious in promoting vegetation. That snow promotes vegetation, by keeping the earth warm, there can be no doubt. The internal parts of the earth are heated uniformly, it is said, to the forty-eighth degree of Fahrenheit. The cold atmosphere of the winter months, were the surface of the earth exposed to its influence, would reduce the temperature to that degree of cold by which the roots of vegetables would be seriously injured, if not destroyed. 'Providence has, therefore, in the coldest climates, provided a covering of snow for the roots of vegetables, by which they are protected from the influence of atmospheric cold. The snow keeps in the internal heat of the earth, which surrounds the roots of vegetables, and defends them from the cold of the atmosphere.' T.

SCHOOL LIBRARIES.—The most economical and the most efficient mode of furnishing and managing Libraries for our COMMON SCHOOLS, will undoubtedly be by the agency of Lyceums. If each pupil in all the schools in a town should contribute one cent every Monday morning, to be appropriated to library books, by the aid of their town Lyceum, ample funds would be furnished, and each school might, by exchanges, have the use of all the books the whole should produce.

For summer schools, this might be managed by LADIES' Lyceums, better than by any other means.—There is probably not a town or village in the Union, where, if a few ladies should undertake it, they might not furnish every school with a most valuable collection of books the ensuing season.

We can hardly conceive of a measure more important or more feasible for extending the usefulness or raising the character of our 50,000 schools.

The Idea of God.

The human mind necessarily seeks after *unity* in all its conceptions. Whatever event takes place under our notice, we immediately wish to refer it to some known law, according to which other events have taken place, so that we may regard them all as exemplifications of that one law. A stone, at liberty, falls to the ground. Another, at rest on the ground, requires force to raise it. We account for both, by saying that the earth attracts the stone. Other substances fall. We say that the earth attracts them. Water falls. We say that the earth attracts water. A piece of cork, set at liberty under water, rises. We stop and think. We had begun to think that the earth attracts all substances, but here seems to be a violation of that law. On reflection, we bethink ourselves, that the earth attracts a cubic inch of water, more powerfully than a cubic inch of cork; and therefore, the earth draws the water down under the cork, and crowds the cork upwards. We now say we understand this phenomenon. We can refer it to the one law, which was already in our minds. We have found the unity, after which we stopped to search. We next notice, that smoke *always rises*. This, again, brings us to a stand. By and by the question occurs, is the smoke driven upwards by the air, as the cork is by the water? Here we get sight of the desired *unity* again, and begin to feel that we understand the subject. But has the air any weight? We weigh some large, light vessel, and then, having exhausted the air from it, weigh it again, and find that it weighs less than when full of air. The air, then, has weight, or, in other words, is attracted by the earth. Thus we go on, increasing in knowledge at every step, till we conclude that the earth attracts all terrestrial things. Then we look to the heavens. We watch the motion of the moon. What keeps her in that course? Why does she bend her path from a straight line, and go round the earth? Newton asks himself the question; and as he sees an apple fall, he asks, does the earth attract the moon, as well as the apple? If it does, what effect will the earth's attraction have upon the moon's course through the heavens? He begins his computation, and in the end, finds that the attractive power of the earth, if it extends to the moon, must be just sufficient to draw her out of a straight line, into the very path in which she moves. Is it so with the earth, and other planets which revolve round the sun? Every planet attracts those which move around it.—He observes the tides. What makes the waters of the ocean rise up, instead of sinking to one uniform level? He notices, that the tides follow the course of the moon. Does the moon attract them? He calculates again. If the moon has an attraction like the earth, and extending to the earth, it will be just sufficient to raise them so high as they are seen to rise. The moon, then, attracts the earth. All the planets attract each other. Every mass of matter attracts every other mass; each particle, every other particle. Mutual attraction is a law of the material universe.

In pursuing a course of thought like this, we feel that we are making progress in *knowledge*; that the further we go in it, the more perfectly we *understand* things. In all our investigations, in all our attempts to *explain* the phenomena of the universe, we of necessity fall into the same course of thought; we endeavor to refer many facts to some *one* law, according to which they all take place; we seek after some one thing, which is the cause of many other things—the reason why they are as they are. So far as we are able to do this, we feel that we gain knowledge of them; and so far as we fail to do this, we feel that we remain in ignorance. Such explanation is, indeed, what we mean by *understanding* things. If this course of thought is not the course which we ought to pursue,—if this tendency of our minds to seek for *unity* is not a tendency towards *truth*, then, what we call knowledge is indeed nothing but nonsense. And not only so, but we are incapable of understanding things aright; for it is utterly inconceivable that we should understand them in any other way than this. We must allow that this tendency of our minds is right, or give up the notion that we either do or can *understand* any thing.

This search after unity has no limits. The mind is always glad to carry it further. When we have referred several phenomena to one cause, and several to another, we are always glad, always feel that we have made an acquisition and understand more than we did before, if we can find some one cause for both these causes. It is impossible for us to imagine any limit, beyond which we would not do this if we could;—impossible for us to conceive that there should be any limit, beyond which a progress towards more perfect unity would be a progress in the wrong direction;—impossible for us to imagine that, while we have in our mind two causes, finding one cause for them both should make us more ignorant, or should not be an addition to our knowledge. The mind rests, and can rest, in nothing short of absolute unity. It, from necessity, regards its knowledge of the universe as imperfect, so long as it is not able to refer all the phenomena of the universe to some one ground of existence; to some one reason why such things are, and are as they are.

There is, then—or our knowledge on all subjects is all nonsense, and the supposition that we understand any thing is all a mistake—there is ONE GROUND OF EXISTENCE for the universe.—one cause why the universe contains what it does, and is under such laws as it is. Thus we come at the idea of a First Cause. It is implied in the structure of every sane mind; in the course of thought, which every man takes with perfect confidence in its correctness; in the very supposition that we *understand* any thing. We have the idea of a First Cause, but is it an intelligent cause? Is it a Cause, having moral attributes? The course of reasoning which we have now pursued does not settle these questions, and therefore, does not conduct us to the Christian idea of God. For aught which this argument proves, the First Cause may be the God of the Bible, or may not. We must search for the idea of God in another direction, and shall attempt it at another time.—[*Windsor Vt. Chronicle.*

Simplicity of Nature.

We have more than once adverted to the simplicity of science—of physical, intellectual, and moral science—of the science developed in the two great volumes of our Creator, the book of nature, and the book of revelation.

In physical science, the most delightful and the grandest simplicity prevails, both in the elements of matter, of all material substances, and the laws which are established to govern those elements, and that matter. In the present number of the Lyceum we invite the attention of our readers to a few of the elementary substances of nature, especially to the fact that a single element is used to produce material substances of ten thousand forms and in endless variety.

Heat, for example, appears to be an universal agent and an universal ingredient in material substances. It may well be supposed, that there is not a particle of matter in the universe, of which heat is not one ingredient, and on which it does not act.

The next most universal element of matter is probably oxigen. This forms a part of air, earth, and water; of acid and alkalies; of salts and ores; of animals and vegetables; of nutriments and poisons; of bread and alcohol; of water and rum; in a word, of almost every material substance which our all-wise and all-bountiful Creator has furnished for our study and our use.

Oxigen forms nearly a quarter of air, seven eighths of water, about one half of sugar, starch, gum, and gluten, a considerable part of all acids, oils, and resins, indigo, and all other substances formed from vegetables or animals, and of the whole mass of every animal and vegetable upon the earth.

A knowledge of this fact affords a high degree of animation and delight to every pupil of nature—to every one who has commenced the humble, but dignified employment of learning his Creator's works and his Creator's laws, and his own blessings and duties. There is a glorious humility in being a child-like pupil of such a teacher, and a most obedient follower of such a master, especially when the task is so easy, and the employment so delightful.

Another of the simple elements of matter which a Creator of boundless wisdom and overflowing goodness has made for our use, and placed at our feet in ten thousand forms, is hydrogen. This, though less extensively diffused through the material universe than either heat or oxigen, appears in such endless and beautiful variety, as to give it a strong claim to our attention and our interest. Except oxigen, it is the only ingredient in water, and of ecurse exists wherever water exists; whether in the heaving ocean, the flowing river, the foaming cataract, the meandering stream, the tempestuous rainstorm, the gentle dew, the rising vapor, the angry cloud, or the moisture universally diffused through the animal and vegetable creation, and through the earth on which they stand, and the air by which they are fanned, and which they inhale in their life breath.

Besides the infinite variety of forms in which hydrogen presents itself as an ingredient of water, it is also a part of every solid material in the animal and vegetable kingdoms. This, like oxigen, forms a part of sugar, starch, gums, resins, acids, oils, glue, alcohol, and every other vegetable and animal product which can be named.

How beautiful it is, and how loudly does it speak for the wisdom and power of our Creator, that he should contrive and create two simple substances, capable of being combined in such an endless variety of forms, and applied to innumerable important purposes, to enrich the field of science, and to contribute to the comfort and the sustenance of man. Under such all-pervading wisdom, and such boundless goodness, to simplify science, and to sustain and bless man, is it not stupidity, is it not ingratitude, to pass unnoticed the grandeur of science, and to receive unacknowledged the bounties of his providence?

Who will not become a humble disciple of such a glorious teacher? Who will not become a faithful subject of such a wise and benevolent ruler? Who will not participate in the beauties and riches in the boundless and exhaustless field of science? Whose heart will not swell with gratitude and love to such a wise and benevolent Creator, and a ceaseless benefactor?

Summer Schools.

There are certain measures which have never failed to increase the usefulness and elevate the character of schools in whose behalf they have been adopted; and there is no school in the country in whose behalf they may not be adopted. One measure is the frequent *visiting of schools* by parents, and others interested in them. A little aid and encouragement which may, in this way, thus be rendered to the teachers, and a few kind words to the children, never fail to give new life and energy to a school when the experiment is tried.

Another measure, which is uniformly successful in favor of schools, is the *meeting of teachers*. Their meetings give them an opportunity to enlighten, animate, and strengthen each other in the great and common cause in which they are engaged.

Another measure is the *use of apparatus* in schools. The importance of this aid is now so well understood, and so universally acknowledged, as to require nothing but some feasible mode of procuring it, to render its use universal. And the mode which has been most successful, and which may be universally adopted, is by the contribution of the pupils. Twenty or thirty cents from each pupil would be sufficient to furnish any school with a set of apparatus.

By this mode the children benefit *themselves* by procuring their own instruments of instruction, and still more by *giving* for the benefit of each other. This act calls immediately into exercise the benevolent and generous feelings of the children, and prepares them to engage in other and larger works of benevolence.

Since then these measures are found by experience to be infallible in their useful and very important results, and as they can be adopted in behalf of every school in the Union, we most earnestly hope that every teacher and every parent will aid in trying the experiment this very season.

Bowdoin Hall School Lyceum.

In our last, we mentioned an entertainment we received from a lecture on the atmosphere, given by a member of a school Lyceum, a lad of fourteen years of age. On Monday evening last we were again richly entertained, by a lecture on the Geology of Massachusetts, given by another member of the same juvenile society, a lad of fifteen years old. A large number of the members of the legislature were present at the lecture, whose expression of approbation and interest was sufficiently strong to reward the juvenile lecturer, for his attempt to benefit himself by a benefit to the public. It was remarked, by more than one, that the lecture would have done credit to any member of any Lyceum.

The generous offer made by this Lyceum, to present to the members of the legislature in behalf of the schools of each town in the state, a small elementary set of geological specimens, with a tract to explain them, reflects the highest honor upon the patriotism as well as the intelligence of this juvenile band, formed for the double purpose of improving themselves, and doing good to others.

We hope that this offer will be reciprocated by the teachers and pupils of the schools in every town in this Commonwealth; that in every town a meeting of the teachers will be invited by some citizen soon after they commence their summer schools, to examine the specimens and read the tract, and to make arrangements for using both in their several schools, to give them greater interest and utility, the coming season.

School for the Blind.

It is impossible to conceive of a severer comment upon many of our primary schools, than was furnished on Tuesday evening last by the School for the Blind. A miss of eight years old, in the course of six months, had learned to read with greater fluency than most children do with the aid of eyes in two years. She not only read with a good degree of propriety, finding any place in the testament, which was mentioned by a spectator, but she solved a sum in multiplication, with three figures in the multiplicand, and the same in the multiplier, in a shorter time than one child in a thousand of that age could do by a slate and pencil. She also showed herself to be familiar with geography, by her prompt answers to numerous questions which were asked her, and by her pointing out numerous places on the map.

Another miss of six years old, the sister of the former, who had been at the school the same time, read with a good degree of fluency in the testament, while children in the Boston primary schools are from six to twelve months, and sometimes two years, in learning the alphabet; and during the three or four years they attend these schools, they attempt to do nothing but to read and spell, and to answer a few of the most simple questions in arithmetic.

A lad, apparently about eight years old, performed sums in vulgar fractions, which few if any children of the same age in our public schools could have done; and the explanation of the process he pursued gave sufficient proof, that there was no deception, and no *blindness* in the *mind* of the boy.

The fact that a deep interest was sustained in the crowded hall of twelve or fifteen hundred ladies and gentlemen for three hours, and until after 10 o'clock, left no doubt in the mind of any one, of the kind or the depth of the impression that was made on the subject of educating the blind, or of the blindness of educating the seeing.

Mr. Emerson's School.

We have been deeply interested in a statement, made by Mr. Emerson, of Chester, N. H., of the plan and management of his school. It is one of those instances which are worthy to be held up as an example to be followed by every school, whether for adults or children, both in our country and throughout the globe.

The part of his plan which we refer to particularly, is the *systematic benevolence* in which the pupils engage.

Connected with the school is a Lyceum, or a society for *doing good*, for which object they have engaged in various measures, which they pursued until they completed them. One of the first objects they attempted, was, to put a set of geological specimens into every school in that town, which they accomplished in a short time, when they entered upon another and another, which they also readily accomplished.

This plan so exactly comports with the views we have presented again and again in the Lyceum, as to afford us a high degree of satisfaction in the belief, that this fundamental principle in school and family education will soon be recognized as the only sure corner and foundation stone of individual and of national character.

Simultaneous Efforts.

The power of *union*, and the power of *sympathy*, when combined by simultaneous efforts, is irresistible. And there is no subject to which it may be more appropriately or more successfully applied, than to the *diffusion* of *knowledge*. And there is no branch of knowledge which more strongly invites this power and these efforts, or which is more worthy of them, than Natural History. Let the friends of Education throughout the country unite their efforts in collecting cabinets of Natural History, and in exchanging specimens the present season, and in less than a twelvemonth, every town and village in the Union might be furnished with a place of intellectual and social resort, highly interesting and useful to all classes and ages.

Massachusetts Lyceum.—A public meeting of the friends of Education was held on Wednesday evening last, when several reports were made of the state and progress of Lyceums, and the cause of Education in different parts of the country.

The meeting was adjourned till Wednesday evening next, when addresses are expected from several of our most able speakers, who will render the occasion interesting to such ladies and gentlemen as may be disposed to attend.

Laws of Motion.

Every thing in mechanics depends upon very simple principles, and may be resolved ultimately into the power of gravity and the laws of motion.

In treating of gravitation, in a preceding part, it was shewn to be that kind of attraction which subsists between the mass of the earth, and all those bodies which are on its surface. It is that which, in the stated revolutions of this planet, prevents us, and all the bodies which surround us, from falling into infinite space; and which draws so forcibly every thing whatever towards the centre of the earth.

That this attraction is greater or less at different distances is generally allowed: a body which at one semidiameter of the earth weighs a pound, will have four times less weight at two semidiameters, and nine times less at three. At small distances, however, we are not sensible of this difference in weight, for though we could not be elevated a mile above the earth's surface, when we consider its diameter is eight thousand miles, we shall easily see that the small difference which this would produce is scarcely to be estimated.

Falling bodies, however, we know, acquire an accelerated or increased force, according to the height from which they fall; but this must be accounted for from different principles. Every man is sensible that the fall of a stone is to be dreaded in proportion to the height from which it descends.

If it falls from only a foot above his head, it is not so likely to be so fatal as if it fell from the parapet of a high house. The falling body, therefore, must of necessity acquire an increase of velocity in its descent; and, in fact, it is said that a leaden bullet let fall from one of the steeples of Westminster Abbey, acquired velocity sufficient to pierce through a deal board.

This effect must therefore be referred to the first law of motion, as laid down by Sir Isaac Newton, which is, that 'all bodies are indifferent to motion and rest: in other words, a body at rest will continue in that state, unless put in motion by some external impulse; and a body in motion will continue that motion for ever, unless stopped by some external obstruction.' This property of matter is termed, in the technical language of philosophy, its vis inertiæ.

To apply this to the case immediately in point, it is evident that the bullet which is dropped from the steeple of Westminster Abbey, having, by the power of gravity, once acquired a certain degree of motion, would continue to fall by the motion it had received by the first impulse, even if the cause was to cease. For instance, if when it had fallen half way, it was impossible to deprive it of gravity, it would still, by the above law, continue its motion, and in the direction in which it was sent, as a stone continues to go on, when thrown by the hand, without any new impulse.—The power of gravity, however, does not cease, and therefore every inch the bullet falls it receives an increase of motion. Thus, if in the space of one second it falls one pole (sixteen feet and a half), it will then have acquired as much swiftness or velocity as will carry it through three poles in the next second, through five in the third, through seven in the fourth, and nine in the fifth. This will account for the accelerated motion, and for the increased force with which it falls near the bottom. Thus the time which bodies take in falling is easily calculated, for if they fall about one pole in the first second, which is what they nearly do by the force of gravity, they will then fall three in the next, and in five seconds they will fall about twenty five poles, or three hundred feet. If there was no resistance from the air, the velocity of falling bodies would be still greater, and as water is a medium more dense than air, the resistance must be greater, and the motion of a body falling in water proportionably slower.

The same principle holds with respect to projected bodies. 'It seems a bold assertion,' says Mr. Walker, 'to say that a cannon, discharged horizontally on the top of a tall tower, shall throw a ball two miles distant; and that it shall strike a level plain, or the ground, at the same instant that another ball, let fall from the muzzle of the gun, (the moment of its discharge) shall strike it! but there is no doubt of the fact; for though the projected ball may move point blank (and bid defiance to the power of gravity half its way), it will perform that half in so short a space of time, that it will fall a rod in the first second, three rods in the second, &c. like all other falling bodies; for an horizontal impulse retards not the power of gravity, in respect of time.'

As heavy bodies are uniformly accelerated in their descent, they are as uniformly retarded by the power of gravity in their ascent. Thus, if we were to throw the bullet up to the steeple of Westminster Abbey, we must give it just as much force as it acquired in its descent.

It is from the sluggishness of matter, which is called the *vis inertiæ* of bodies, that there proceeds a something like an endeavour in all bodies to preserve that state in which they are; when at rest to continue in that state of rest, and when in motion to continue in motion. This position may seem abstruse, but it will admit of illustration by the most common facts. If we push a bowl of water with the hand, the water flies over the edge upon the hand, for it endeavours to continue in the state of rest in which it was. But if we take the bowl in our hand, and run away with it, and suddenly stop short, the water flies forward the way we were running, from its vis inertiæ, or tendency to continue in the same state of motion. In the same manner, if sitting in the front of a carriage, which, after going very fast, stops suddenly, we are jolted from our seat, our heads will drive through the front glass of the carriage.

It is a plain and obvious principle, that the greater the quantity of matter is which any body contains, the greater will be its *vis inertiæ*. The heavier any body is, the greater the power which is required, either to set it in motion, or to stop it. On the other hand, the swifter any body moves, the greater is its force, as was sufficiently exemplified in the case of a bullet, which was supposed to fall from Westminster Abbey.

Upon this easy principle depends the whole of mechanics.

The second law of motion laid down by Sir Isaac Newton is—'That the alteration of the state of any body from rest to motion, or from one motion to another, is always in proportion to the force which is impressed, and in the direction of that force.'

All motion is naturally rectilinear. A bullet projected by the hand, or shot from a cannon, would forever continue to move in the same direction it received at first, if no other power diverted its course. Therefore, when we see a body move in a curve of any kind whatever, we conclude it must be acted upon by two powers at least; one putting it in motion and another drawing it off from the rectilinear course it would otherwise have continued to move in: and whenever that power, which bent the motion of the body from a straight line into a curve, ceases to act, the body will again move on in a straight line, touching that point of the curve in which it was when the action of that power ceased. For example, a pebble moved round in a sling ever so long a time, will fly off the moment it is set at liberty, by slipping one end of the sling cord: and will go on in a line touching the circle it described before; which line would actually be a straight one, if the earth's attraction did not affect the pebble, and bring it down to the ground. This shews that the natural tendency of the pebble, when put in motion, is to continue moveing in a straight line, although by the force that moves the sling it is made to revolve in a circle.

From this maxim it will evidently appear, that when two forces act at once upon the same body, in different directions, it will go in neither, but in a course between both.

If both forces act upon the body in such a manner, as to move it uniformly, the diagonal described will be a straight line, but if one of the forces acts in such a manner as to make the body move faster and faster, then the line described will be a curve.

And this is the case of all bodies which are projected in rectilinear directions, and at the same time acted upon by the power of gravity, which has a constant tendency to accelerate their motions in the direction wherein it acts.

This last is an observation of great importance, as it is the foundation of that beautiful system of Newton concerning the planetary motions. The force which impels these bodies forward in a rectilinear direction, is called the *centrifugal* force, as driving them from the centre; and the force which drives them towards the centre, or the power of gravity, is called the *centripetal* force.

The third law is, that 're-action is always equal to action.' In other words, the resistance of a body at rest, which is acted or pressed upon, acts against a moving body with a certain degree of power, and produces the same effects as an active force would have done in the same direction.

Thus, if we strike an anvil with a hammer, the anvil strikes the hammer with the same force with which it is struck itself. Hence a common trick in the country, of a man lying on the ground with a large anvil on his breast, and suffering a strong man to strike on it with a sledge hammer with all his might. If the anvil is very large, its *vis inertiæ* resists the force of the blow, and the man is perfectly safe. If the anvil was very small, only the weight of a pound or two, the first stroke would kill the man.

Hence it is evident, that when a load is drawn by a horse, the load acts against the motion of the horse, and the action of the animal is as much impeded by the load, as the motion of the load is prompted by his efforts.

Before we proceed to the consideration of the six mechanic powers, it is necessary to say a few words on what is called the *centre of gravity*.

The centre of gravity is that point of a body in which the whole force of its gravity or weight is united. Whatever, therefore, supports that point, bears, in fact, the weight of the whole body; and while it is supported it cannot fall, because all its parts are in perfect equilibrium about that point. Thus, if we endeavour to balance a cane, by laying it across upon our finger, after sometime we find a place where neither end will preponderate. The part, then, which rests upon our finger is the centre of gravity.

An imaginary line drawn from the centre of gravity of any body towards the centre of the earth, is called the *line of direction*; and it is in this line all heavy bodies will descend.

The difficulty of sustaining a tall body upon a narrow foundation will be evident, if we attempt to balance a cane with its small end upon our finger. Its centre of gravity is somewhere about the middle of the cane, and unless we have sufficient dexterity to keep the foundation on our finger perpendicular under the centre of gravity, it will undoubtedly fall. In this consists the great difficulty of posture masters and rope dancers. The dancer on the rope balances himself with a long pole loaded with lead, and keeps his eye steadily on some point exactly parallel to the rope, by which he can see whether his centre of gravity is either on one side or the other of his slippery foundation; and if any irregularity takes place, he rectifies it by his balancing pole.

All bodies stand firm on their bases, when the line of direction falls within the base; for in this case the body cannot be made to fall, without first raising the centre of gravity higher than it was before.

The nearer the centre of gravity, and the line of direction coincide, the firmer any body stands upon a horizontal plane. If the plane is inclined, a body will slide down it, if the line of direction falls within the base; but it will tumble down when that line falls without the base,

The broader the base, the firmer any body stands; thus we find we stand firmer with our feet a little asunder, than when close together; and, in the former case, it will require a much greater force to push us down.

Whenever the line of direction, however, falls without the base of our feet, we necessarily fall 'and it is not only pleasing,' adds Mr. Ferguson, 'but even surprising, to reflect upon the various and unthought-of methods and postures which we use to retain this position, or to recover it when it is lost. For this purpose we bend our body forward when we rise from a chair, or when we go up stairs; and for this purpose a man leans forward when he carries a burden on his back, and backwards when he carries it on his breast; and to the right or left side as he carries it on the oposite side. A thousand more instances might be added.'—[*Book of Knowledge.*

On the Duties of School Boys.

Quintillian includes almost all the duties of scholars in this one piece of advice, which he gives them; to love those who teach them as they love the sciences which they learn of their instructors, and to look upon their teachers as fathers, from whom they derive, not the life of the body, but that instruction which is in a manner the life of the soul. If they possess this sentiment of affection and respect, it suffices to make them apt to learn during the time of their studies, and full of gratitude all the rest of their lives.

Docility, which consists in submitting to the directions given them, in readily receiving the instructions of their masters, and in reducing these to practice, is properly the virtue of scholars, as that of masters is to teach well. The one can do nothing without the other; and as it is not sufficient for a laborer to sow the seed, unless the earth, after having opened her bosom to receive it, encourages its growth by warmth and moisture; so the whole fruit of instruction depends upon a good correspondence between the master and the scholar.

Gratitude for those who have labored in our education is the characteristic of an honest man, and the tribute of a good heart. 'Who is there among us,' says Cicero, 'that has been instructed with any care, that is not highly delighted with the sight or even the bare remembrance of his preceptors, masters, and the place where he was taught and brought up?' Seneca exhorts young men to preserve always a great respect for their masters, to whose care they are indebted for the amendment of faults, and for having imbibed sentiments of honor and probity.

The exactness and severity of our teachers may displease sometimes at an age when we are not in a condition to judge of the obligations we owe them; but when years have ripened our understanding and judgment, we discern that their admonitions, reprimands, and severe exactness in restraining the passions of an imprudent and inconsiderate age, are the very things which should make us esteem and love them. Thus Marcus Aurelius, one of the wisest and most illustrious emperors that Rome ever had, thanked heaven for two things especially, for his having excellent tutors himself, and that he had found the like for his children.

The duties of school boys consist in docility and obedience, respect for their masters, zeal for study, and a thirst after the sciences, joined to an abhorence of vice and irregularity, together with a sincere and fervent desire of pleasing God, and referring all actions to him.

ROLLIN.

Ladies' Lyceums.—It is our intention, during the coming summer, to pursue a systematic course of illustrations on several subjects, with direct reference to Associations of Ladies for intellectual and benevolent purposes. We shall include in this course something on Botany, Geology, and our own Systems, illustrated by cuts.

Besides reading, conversation, and written communications, which might be introduced at Ladies' Lyceums, they might interest themselves in schools with a certainty of success, which of itself would be a sufficient object for weekly meetings. By inviting teachers at these meetings, and visiting their schools, and presenting to them some mineral, plant, map or other sheet, to show to the children and their teachers that their parents and other friends were interested in their schools, an interest might be awakened, and an effort produced, which would at least double the value of the schools the coming season.

If some three or four ladies in each town (one could bring it about) should unite in effecting this object, the results which must certainly follow, would give them occasion to congratulate themselves on the accomplishment of an object for the advancement of Education, which cannot be expected from any other source.

We think that one of the first steps to be taken by a Ladies' Lyceum is, to invite all the female teachers in their town to meet, and to propose to them to request their pupils to make small collections of money to procure a few books, as the commencement of a Library, a set of Apparatus, or some other collection which shall be for their common benefit.

The great advantage of this step will be to enlarge the children's hearts, and to prepare them for another and still another, for a larger and a still larger act of benevolence. Thus a new character, an intellectual and moral character, might be given to our schools in one season, which they might not otherwise receive for years, and until their present members were out of the reach of their influence.

Baltimore Lyceum.—About two years since, a Lyceum was organized in Baltimore, with a juvenile department, which at the time gave great interest to the society. Since that, the plan of the institution is enlarged, and is intended to bring within its influence all classes and all sections of the city.

Spirit of the Age.—We have seen the first number of a weekly paper under the above title, which is certainly deserving the name it has taken.—It is filled with matter altogether in the spirit of the age—that is, a spirit of intelligence, of liberality, and of improvement. We hope it will have a wide circulation, as there can hardly be too many papers of a truly valuable character, or too few, when made engines of a bad spirit, or of worthless trash.

Teachers' Meeting.—The Teachers' Meeting proposed to be held at Andover, on the 27th of this month, is deferred until the 10th of April.

Interesting Chemical Discovery.—A singular and highly important discovery has recently been made by Messrs. Capron & Boniface, chemists, at Chaillot, in France. By a process which they keep secret, and to which they have given the name of 'Momification,' they have succeeded, after passing a number of years in experiments, in so modifying and perfecting the known processes of preserving bodies, as to reduce them to mummies, leaving all the forms unaltered. All the elements of disorganization which show themselves in the human body so soon after death are completely destroyed, and not only the external body, but all the vescera, the lungs, the heart, the liver, and even the brain, are perfectly preserved; the features also remain so perfectly uninjured, that correct portraits may be taken at any length of time after death, and, as the body is not enveloped in bandages as in the Egyptian method, the natural forms are perfectly preserved. The operation requires but few days, after which the dead bodies may be preserved in a room or vault, or interred in the ordinary way, without being accessible to worms. They may also be exposed to all the variations of the air, either in a standing or sitting position, without undergoing any alteration.

BOOK OF NATURE.

USES OF ATMOSPHERIC PHENOMENA, METEORS &c.

WITHOUT entering upon the vast utility of the *winds* in the world of art, with the many purposes to which they are made subservient and applied, in navigation, agriculture, manufactures, trade, and commerce; or recapitulating what we have already said respecting their vast import in the preserving the equilibrium and salubrity of the atmosphere, we will briefly observe, that the wind may be said to act the important part of nature's great husbandman, by scattering abroad the productive principles of a multitude of plants; and instead of that imaginary *water-bearer* which the ancients traced out among the stars, the eye of modern philosophy has discovered in the operation of the wind, a real *Aquarius* in the heavens, bearing about his precious treasures, and dispensing them where most wanted.

Electricity is indeed a most powerful agent in nature, and we are probably but acquainted as yet with a small proportion of its wonderful effects; but from what we do know, we have reason to conclude, that the benefits to be derived from this all-pervading principle, are numerous as the appearance it puts on—are infinite as its extent. Since the phenomena produced by this fluid have been observed with attention, the true cause of thunder and lightning seems to be ascertained. As the motion of light is almost instantaneous, and that of sound is at the rate of a league in forty pulsations, the distance of thunder may be easily ascertained; for if we can count thirteen pulsations betwixt the flash and the sound, the thunder will be about a mile off.—A means, however, has been invented, by which houses, ships, and other buildings may be secured from its ravages, and places of the greatest safety in thunder-storms pointed out; but what are the evils experienced from thunder-storms when put in competition with the advantages to be derived from them? What would the atmosphere, it may be observed, become, but for the winds? But notwithstanding the blessings derived from those wholesome ventilations, what would become of the atmosphere itself, were it not for the loud-roaring thunder, the forked lightning, and all the other varieties of electrical phenomena, which purge the air of those noxious substances that are continually mixing with it, and purify by fire the upper regions, where so many light inflammatory substances are arrested in their course?

There appears to be a continual circulation going on in the atmosphere, by which the inflammable air generated between the tropics is made to ascend by its lightness to the upper regions, where, by the motion of the earth, it is urged towards the poles; hence, the inflammatory exhalations continually arriving and taking fire as they approach, are made to form those beautiful appearances called *northern* and *southern lights*, which, although they are oft invisible by the thickness of the weather, at other times amuse the inhabitants even of our climate in clear frosty weather; and these *merry dancers*, as the vulgar call them, are no doubt of infinite service to the people of the polar regions, by imparting a lengthened, if not uninterrupted supply of that light and cheerfulness of which they would otherwise be deprived during their protracted winter.

Were it not for the beneficial operations of the electric spark, which is always ready at the command of its maker, to kindle these combustible materials before they become sufficiently accumulated to involve the whole in one universal conflagration, the world, it is probable, would long ere now have been destroyed by fire. There is no occasion (according to the opinion of some theorists) for calling in the aid of a comet to complete this work of destruction. The Almighty has only to suspend the operations of his *fiery meteors*, and the elements will soon become sufficiently inflammatory to catch fire by a single spark; so that, in fact, those terrific monitors of the gazing crowd, instead of being certain indications that an incensed Deity is about to inflict the effect of his hot displeasure on a guilty world, according to the language of philosophy and the whispers of religion, are rather convincing tokens that 'His mercy is not yet clean gone, that the Lord has not forgotten to be gracious.'

The use of *fogs* and *mists* on the tender herbs in the absence of rain, is well known to the grazier and agriculturist; and so sensible was the good man of the land of Uz of the importance of what some may reckon among the inferior kinds of watery meteors (although it is the surest and most universal which the wise Ruler of the World makes use of to render the earth fruitful) that, when he asks the question, 'Has the rain a father?' he does not forget to add, 'Who has begotten the drops of the *dew*?'

From the *clouds* proceed not only those fertilizing showers that drop down fatness, and the windy currents that to a surprising degree agitate the air in warm climates, but by intervening betwixt the earth and the scorching ray of the sun, they serve as screens to protect from injury the grass and tender herbs, and also act the part of conducting mediums by which the electric fluid is conveyed not only from the atmosphere to the earth, and from the earth to the atmosphere, but from one end of the heavens to the other.

Of all the blessings poured out of the treasures of Providence, there is none perhaps of which man is more sensible than that of *rain*. What an alteration on the face of the earth does a seasonable shower produce! No wonder that the Psalmist, when contemplating such a scene, breaks out in such language as this; 'Thou visitest the earth and waterest it: thou makest it soft with showers: thou blessest the sprinkling thereof; the little hills rejoice on every side: the pastures are clothed with flocks: the valleys also are covered over with corn, they shout for joy, they also sing.' Nay, the very manner in which this blessing is made to descend, claims at once our admiration and gratitude; for in general the rain descends in gentle showers, but in the case of thunder there is an exception, when it pours down with impetuosity and in torrents; but let it be remarked, that *here* it acts the part of a life preserver, for when once wet, our clothes become excellent conductors to carry off the electric fluid to the earth!

Even *frost* and *snow* have their uses. *Hail* is known to cool the air in summer, and experience has demonstrated, that 'nature could not give a better covering than snow to secure the corn, the plants, and trees from the effects of cold in winter; and if a frost succeeds after a ploughed field has been well watered by the autumnal rains, the particles of the earth dilate and separate, and the spring then completes the making the earth light, moveable, and fit to receive the kindly influence of the sun and fine weather.'

Water-spouts at sea seem to proceed from the same cause as *whirlwinds* upon land, and if these serve the purpose of carrying up the superabundance of the electric fluid from the earth to the atmosphere, as is with good reason supposed, their utility in the economy of nature must be apparent.

With regard to those *illusory appearances* that we behold in the heavens, do they not teach us in a language plain, evident, and forcible, how easily we may be deceived by our *senses*, and of the consequent importance of placing our actions under the guidance of that REASON which distinguishes man from the brute creation, and was kindly given him as a lamp to his feet, and a light to his path.

'Tis Reason our Great Master holds so dear;
'Tis Reason's rights His wrath resents;
'Tis Reason's voice obeyed His glories crown;
To give lost Reason life, He poured his own.

CHANGES OF THE SEASONS, AND VICISSITUDES OF DAY AND NIGHT.

'These, as they change, ALMIGHTY FATHER, these
Are but the varied GOD. The rolling year
Is full of THEE!'

The Earth, surrounded by the Atmosphere, remains not at rest; for, as we observed in a preceding chapter, the latter is made to revolve with the former in its *diurnal* motion, and to circle with it in its *annual* course.

Before proceeding farther in our researches, we will, therefore, turn our attention for a few minutes to this twofold motion of the earth, which, although it would not, but for external objects, be perceptible to our senses, is rendered extremely important on account of the beneficial effects it produces.

'Of all the effects resulting from this admirable scene of things, (says Bonnycastle,) nothing can be more pleasing and agreeable to a philosophic mind, than the alternate succession of day and night, and the regular returns of the seasons. When the sun first appears in the horizon, all nature is animated by his presence; the magnificent theatre of the universe opens gradually to our view, and every object around us excites ideas of pleasure, admiration, and wonder. After riding in all his brightness through the vault of heaven, he is again hidden from our sight; and we are now presented with a new spectacle of equal grandeur and sublimity. The heavens are on a sudden covered with innumerable stars; the moon, rising in clouded majesty, unveils her peerless light; whilst the silent solemnity of the scene, fills the mind with sentiments and ideas beyond the power of language to express.

'Variety is the source of every pleasure; and the bountiful Author of Nature, in the magnificent display of his wisdom and power, has afforded us every possible means of entertainment and instruction.—What a pleasing succession of scenes results from the gradual vicissitudes of the seasons! Summer, Winter, Spring, and Autumn, lead us insensibly through the varied circle of the year; and are no less pleasing to the mind, than necessary towards bringing to maturity the various productions of the earth. Whether the sun flames on the tropic, or pours his mild effulgence from the equator, we equally rejoice in his presence, and adore that Omniscient Being who gave him his appointed course, and prescribed the bounds which he can never pass.'

But how is this pleasing and useful variety produced?—How is this perpetual succession of Day and Night, of Spring and Summer, of Autumn and Winter, kept up? It is by means simple, but evidently striking, to the man of science and discernment. By the revolution of the earth on its axis once in twenty-four hours, we have the alternate succession of day and night;—by its annual circuit round the sun, together with the inclination of its poles (lying always in the same direction) to the plane of its orbit, we experience all that variety of season, which is so indispensably necessary for the springing up, ripening, and ingathering of the fruits of the earth.

By this constitution of things, that part of the earth's surface which is turned towards the sun, must have the largest share of his visible presence at the time; hence, when the earth is south of that luminary, the inhabitants of the regions north of the equator, must have their Summer; and, on the contrary, those who dwell in the southern latitudes, must have their Winter; but reverse the case, and suppose the earth in that part of her orbit which is north of the sun, and the inhabitants between the equator and south pole must have their longest days, while those who dwell on the opposite side, of course, must have the shortest. At the equinoctial points, the axis of the earth being parallel to the sun, and neither turned into, nor out from him, it necessarily follows, that at those precise times, and no other, the days and nights must be equal throughout the globe; for the instant that the north pole gets beyond the vernal equinox in Spring, it immerges into the sun's light, and the people who inhabit the arctic regions, have six months of perpetual day; while those at the south pole, or contrary extremity of the earth, have an equal duration of protracted night. At the opposite season of the autumnal equinox, the reverse takes place. In the intermediate spaces between the poles and the equator, the inhabitants experience all that vicissitude of light and shade, to which their situations expose them; and which, in the absence of a globe, may be tolerably well illustrated by suspending a large wooden bowl from the hand, and making it revolve round a lighted candle, with its axis inclined a little to one side, and pointing always in the same direction. If, at the same time, this bowl could be made to turn incessantly round on its axis in the progress of its revolution, it would afford a pretty accurate idea how the vicissitudes of day and night are produced.

Let us attend a little to some of the beneficial consequences of this 'ever varying, ever changing scene.' Spring is characterized as the season of the renovation of nature; in which animals and vegetables, excited by the kindly influence of returning warmth, shake off the torpid inaction of winter, and prepare for the continuance and increase of their several species. 'A soft and pleasing languor, interrupted only by the gradual progression of the vegetable and animal tribes towards their state of maturity, forms the leading character of Summer. In Autumn the promise of the spring is fulfilled. The silent and gradual progress of maturation is completed, and human industry beholds with triumph the rich production of its toil. The unvarying symptons of approaching Winter now warn several of the winged tribes to prepare for their aerial voyage to those happy climates where no deficiency of food or shelter can ever distress them; and, about the same time, other fowls of hardier constitutions, which are contented with escaping the iron winters of the arctic regions, arrive to supply their place. From the fall of the leaf, and withering of the herb, an unvarying death-like torpor oppresses almost the whole vegetable creation, and a considerable part of the animal, durng this entire portion of the year: but this state is not always to continue; it is a time of renovation and refreshment;—a time shall come, when many that sleep in the dust shall awake, and shine forth gloriously at the return of spring.

Day is the season of labor and activity; Night is the time for rest and repose. Man goeth forth to his work and to his labor in the morning, and returns to recruit his exhausted powers in the evening; and what an admirable provision for this purpose is *sleep*, which introduces a most welcome vacation, both for the soul and body, during which the exercises of the brain, and the labors of the hands, are at once discontinued

These are some of the inestimable blessings derived from the changes of the seasons, and the alternate succession of day and night; but to man they speak also a moral lesson.

'Behold, fond man!
See here thy pictured life; pass some few years
Thy flowering Spring, thy Summer's ardent strength
Thy sober Autumn fading into age.
And pale concluding Winter comes at last,
And shuts the scene. Ah! whither now are fled
Those dreams of greatness ——————
—————— Virtue sole survives,
Immortal never-failing friend of man.'

'Each night we die, each day are born anew.'

The following exquisite lines were composed by St. Leger L. Carter, Esq.; formerly of the Senate of Virginia. The subject was suggested to his mind in the streets of Richmond, by the happy and independent bearing of a wagoner from Augusta, who drives a fine team, and is moreover an excellent model of health and contentedness.—*Staunton Spectator.*

THE WAGONER.

I've often thought, if I were asked
Whose lot I envied most—
What one I thought most lightly tasked,
Of man's unnumbered host,—
I'd say, I'd be a mountain boy,
And drive a noble team—wo hoy!
Wo hoy! I'd cry,
And lightly fly
Into my saddle-seat;
My rein I'd slack,
My whip I'd crack—
What music is so sweet?

Six blacks I'd drive of ample chest,
All carrying high the heau—
All harness'd tight, and gaily drest,
In winkers tipped with red;
Oh yes, I'd be a mountain boy,
And such a team I'd drive—wo hoy!
Wo hoy! I'd cry—
The lint would fly—
Wo hoy! Dobbin—Ball!
Their feet should ring—
And I would sing—
I'd sing my fal-de-ral!

My bells would tingle, tingle-ling,
Beneath each bear-skin cap—
And as I saw them swing and swing,
I'd be the merriest chap;
Yes; then I'd be a mountain boy,
And drive a jingling team—wo hoy!
Wo hoy! I'd cry—
My words should fly—
Each horse should prick his ear!
With tightened chain,
My lumbering wain
Would move in its career.

The golden sparks—you'd see them spring
Beneath my horse's tread;
Each tail—I'd braid it up with string
Of blue or flaunting red;
So does, you know, the mountain boy,
Who drives the dashing team—wo hoy!
Wo hoy! I'd cry—
Each horse's eye
With fire would seem to burn;
With lifted head,
And nostril spread,
They'd seem the earth to spurn.

They'd champ the bit and fling the foam,
As they dragged on my load—
And I would think of that distant home,
And whistle on the road;
Oh, would I were a mountain boy!
I'd drive a six-horse team—wo hoy!
Wo hoy! I'd cry,
Now, by yon sky,
I'd sooner drive those steeds,
Than win renown,
Or wear a crown
Won by victorious deeds;

For crowns oft press the languid head,
And health the wearer shuns—
And victory trampling on the dead
May do for Goths and Huns!
Seek them who will—they have no joys
For mountain lads and wagon boys.

QUESTIONS ON LYCEUM No. 31.

WHERE was Linnæus born, and in what year?

What was his early progress in the study of Latin and Greek, and school exercises?

To what employment did his father put him, when he gave up his studies?

Who induced the father of Linnæus to withdraw his son from his mechanical employment?

Were his means abundant or scanty, in his early progress in Natural Science?

When did he first conceive an idea of a new arrangement of plants?

By whom was he sent on a scientific tour through Lapland, and at what expense?

With whom did he afterwards visit Lapland, and for what purpose?

What professorship did he hold in the university of Upsal?

What are the two general divisions of mineral coal? and what are some of the varieties of anthracite coal?

What is the appearance of slaty coal, when burning?

What effect has the sulphuret of iron upon coal?

Which is preferred by blacksmiths who have used both kinds of coal, anthracite or charcoal?

With which can blacksmiths perform the most work, charcoal or anthracite?

What part of Europe is distinguished for Gipsies, and what is their character?

What is the tendency of attraction, and what are some of the different kinds?

What is the cause of weight?

What kind of attraction gives strength to different substances?

Do fluids possess any attraction of cohesion?

What is motion, and what are some of the different kinds?

In what School Lyceum in Boston are lectures given by its members?

Into how many climates is the earth divided?

Which have the warmest climate, a continent or islands in the same latitude?

How many Lyceum Agents are needed to supply the country?

What are some of the most common uses of the atmosphere?

What other parts of creation does it affect except animals?

What effect has the atmosphere upon vegetables? and how are minerals affected by it?

Has the atmosphere any connection with light?

Which of our senses are affected by the atmosphere?

Is there any air in water?

Do fishes require air for their subsistence?

What favorable effects have winds upon the ocean?

If the ocean were at rest, into what state would it be reduced?

In what different states is water sustained in the atmosphere?

What is the cause of rainbows?